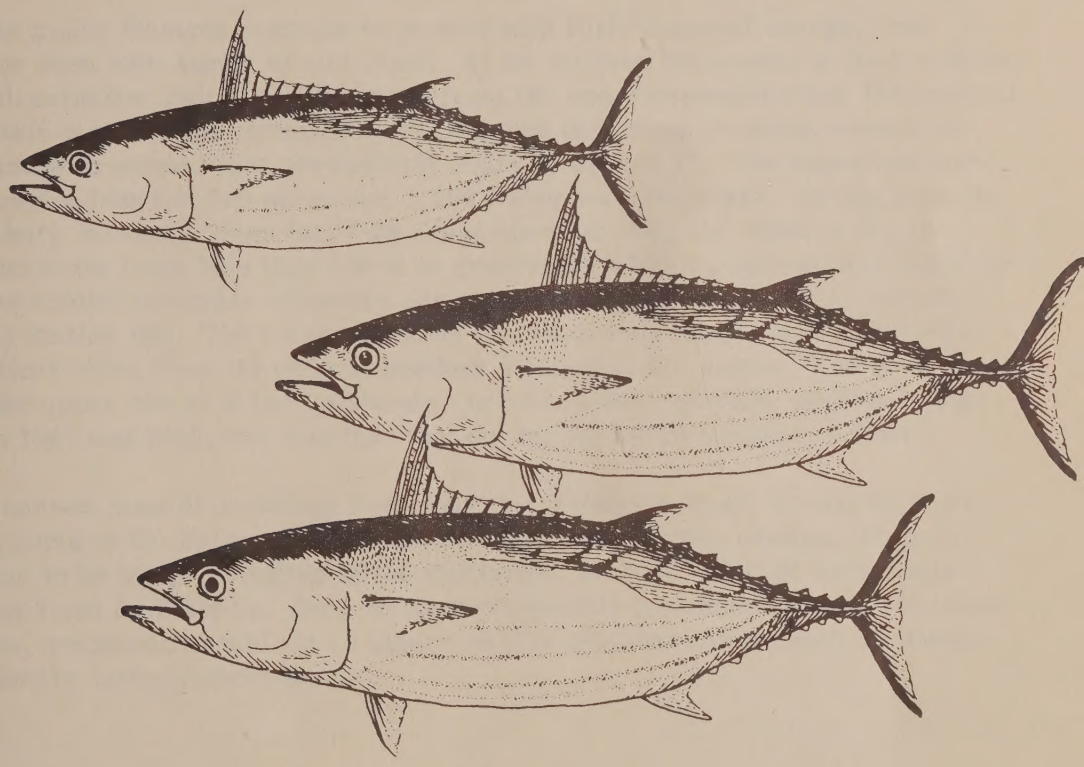
JUNE 1972, No. 6

FISHING INFORMATION

UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION



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VERTICAL SECTIONS OF SUBSURFACE TEMPERATURE IN THE NORTHEAST PACIFIC OCEAN

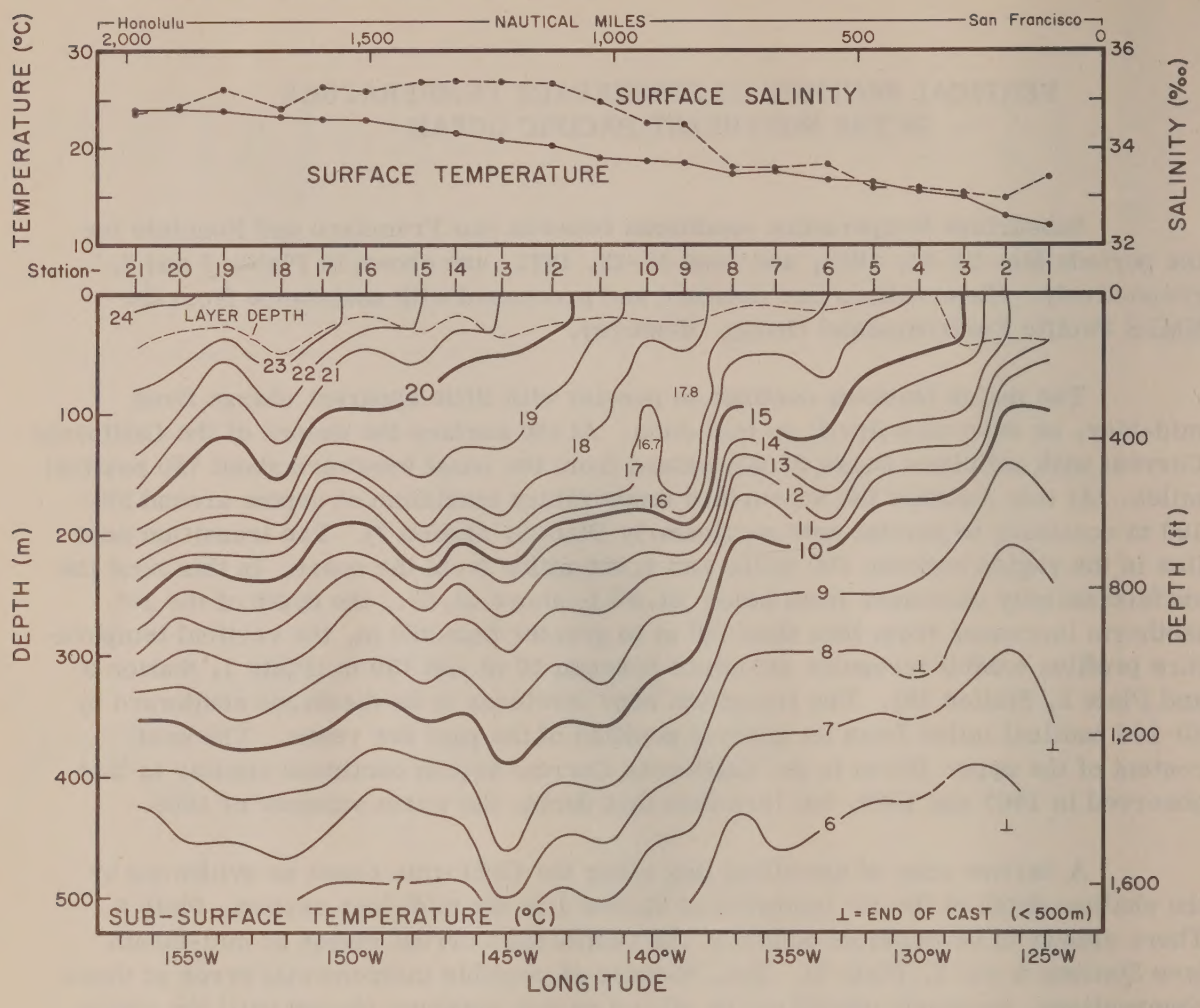
Subsurface temperature conditions between San Francisco and Honolulu for the periods May 27-31, 1972, and June 10-13, 1972, are shown in Plates 1 and 2, respectively. Observations are obtained and processed with assistance from the NMFS Pacific Environmental Group, Monterey.

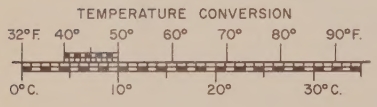
The major features continue to persist with little apparent change from mid-May, or even mid-April, to mid-June. At the surface the waters of the California Current with salinities below 33.6‰ extend from the coast westward about 700 nautical miles. At this distance the subsurface temperature maximum at depths around 90-100 m continues to persist (see particularly Plate 2, Station 7). The transition zone lies in the region between 700 miles and 1,000 miles from the coast. In this zone the surface salinity increases from below 34.0‰ to above 35.0‰, the depth of the 10° isotherm increases from less than 250 m to greater than 350 m, the vertical temperature profiles exhibit irregular structure between 50 m and 150 m (Plate 1, Station 9 and Plate 2, Station 10). The transition zone continues to be displaced southward by 60-100 nautical miles from its general position of the past few years. The heat content of the upper 100 m in the California Current region continues similar to that observed in 1967 and 1969, but less than that during the warm summer of 1968.

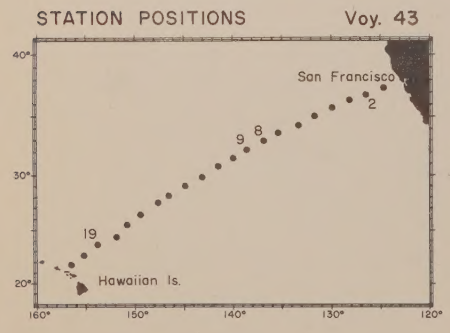
A narrow zone of upwelling lies along the California Coast as evidenced by the shallow depth of the 10° isotherm at Station 1 in the mid-June section, Plate 2. There appear to be incipient eddies in the California Current region at mid-month (see Stations 3 and 5, Plate 2). But, because of possible instrumental error at these observations, emphasis should not be placed on this apparent change until the eddies are confirmed by later observations.

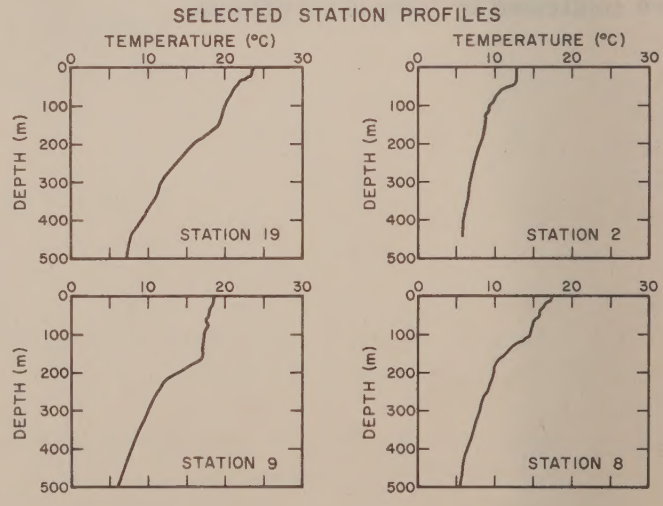
MAY 27-31, 1972
SS HAWAIIAN ENTERPRISE, Voyage 43

PLATE 1.



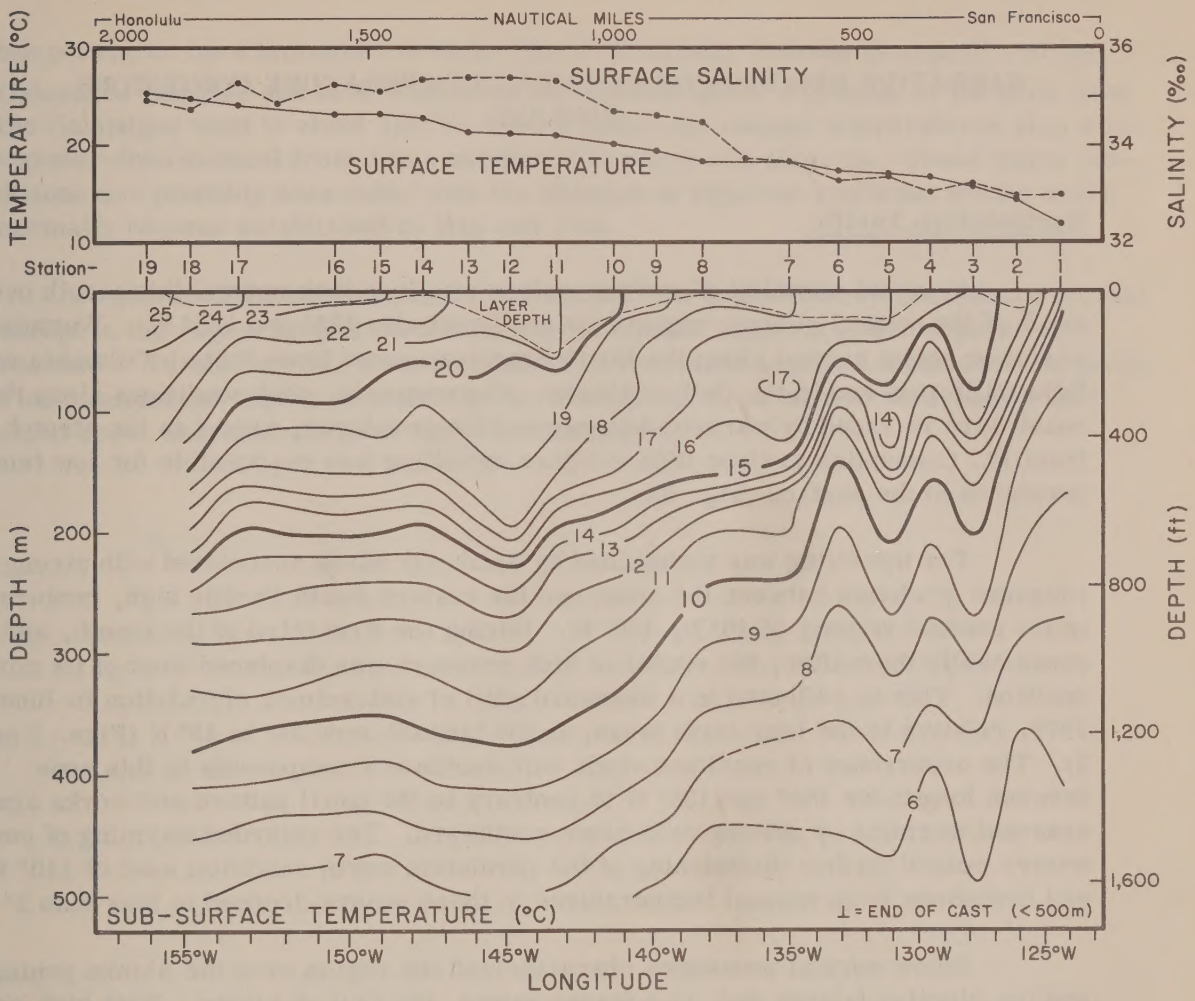


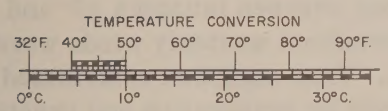


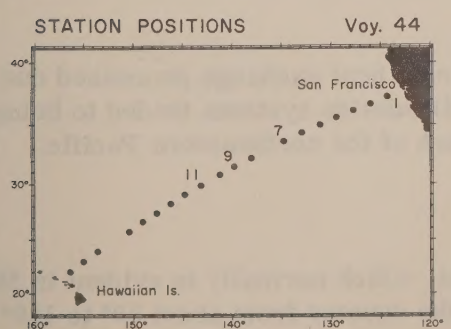


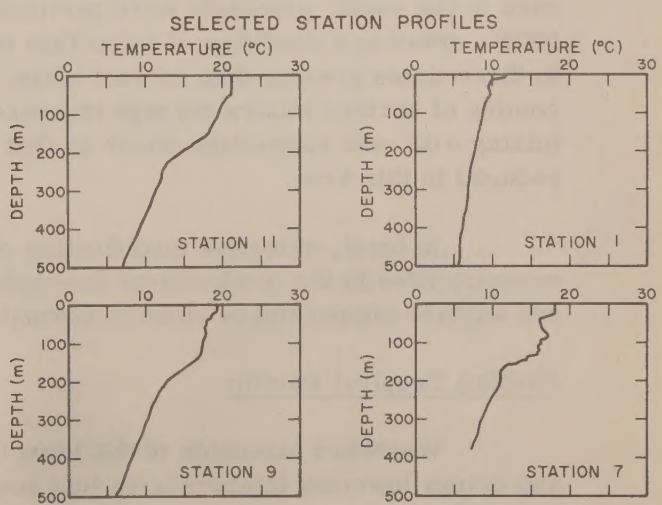
JUNE 10-13, 1972
SS HAWAIIAN ENTERPRISE, Voyage 44

PLATE 2.









NARRATIVE DESCRIPTION OF OCEAN TEMPERATURE CONDITIONS
JUNE 1972

Northeastern Pacific

Seasonal warming of surface waters was less than normal this month over much of the central oceanic region between longitudes 135° and 165° W. Warming was at or above normal along the North American coast from British Columbia to Baja California and in the Gulf of Alaska. Consequently, cool conditions along the coast were replaced by warmer-than-normal temperatures, except in the stretch from Pt. Conception to Cape Blanco where upwelling was responsible for low temperatures at the surface (Fig. 5).

The upwelling was maintained by northerly winds associated with strong pressure gradients between the coast and the eastern North Pacific high, centered in the general vicinity of 40° N, 140° W. During the first third of the month, and occasionally thereafter, the center of high pressure was displaced west of its normal position. This is reflected in a westward shift of anticyclonic circulation in June 1972, relative to the long-term mean, in the latitude zone 35° to 40° N (Figs. 1 and 2). The occurrence of resultant winds with southward components in this zone between longitudes 140° and 155° W is contrary to the usual pattern and works against seasonal warming by driving cold water southward. The retarded warming of central waters caused further diminishing of the persistent warm condition west of 140° W and deviations from normal temperatures in these waters dropped to less than 2° F.

Below normal pressures characterized the region over the Alaska peninsula and the Aleutian Islands and, to a lesser extent, the Gulf of Alaska. With high pressure to the south, gradients were particularly strong between latitudes 45° and 50° N, creating a condition of zonal flow in which resultant westerly winds were two to three times greater than normal (Figs. 1 and 2). This condition contributed to cooling of surface waters through increased heat loss by evaporation and greater mixing with cold subsurface water so that the net seasonal warming was also much reduced in this area.

In brief, selective modification of seasonal heat exchange processed due to eccentricities in the predominent atmospheric circulation systems tended to bring sea surface temperatures close to normal in much of the northeastern Pacific.

Eastern Tropical Pacific

Westward extension of the Peru Current, which normally is evident in May and brings lowering temperatures just south of the equator from about 80° to 120° W, had still not materialized in June. Consequently, positive deviations from normal

temperatures have increased to more than 6° F midway between Guayaquil and the Galapagos Islands, and to 4° F between the equator and 5° S in most of the area from the Galapagos west to about 112° W. South American coastal temperatures also were warmer-than-normal from Lima northward to about 5° S (Fig. 8). These warm conditions are probably associated with the absence of vigorous southeast trades which normally become established in May and June.

North of the equator, to 20° N, sea surface temperatures were above normal except in the region around the Revillagigedo Islands where negative departures reached 4° F, and in a few scattered areas where small negative departures occurred. These conditions appear to reflect a continuation of below normal wind speeds and cloud cover characteristics of the previous month.

SEA SURFACE TEMPERATURE CHARTS, PACIFIC OCEAN
JUNE 1972

Acknowledgements

The following organizations and stations contributed data for June charts:

General Dynamics Convair Division; Ocean Data Buoy DANA
Hopkins Marine Station, Pacific Grove, California, J. P. Balesteri
Kelco Company, San Diego, California
Living Marine Resources Inc., San Diego, California
National Oceanic and Atmospheric Administration
National Marine Fisheries Service, La Jolla, California; Honolulu, Hawaii; Seattle, Washington
National Weather Service, San Diego, California
National Ocean Survey, Pacific Marine Center, Seattle, Washington
Pacific Environment Institute, Fisheries Research Board of Canada West Vancouver, British Columbia, by H. J. Hollister from observations by S. G. Westhaver at Langara Island Light; J. Godin at Cape St. James Light; L. Collins at Kains Island Lightstation; O. A. Edwards at Amphitrite Point Light
Scripps Institution of Oceanography, La Jolla, California, by Margaret Robinson
U.S. Naval Weather Service, Fleet Numerical Weather Central, Monterey, California
Fishing vessels Aleutian, Alma J., Antonina C., Arrow, Betty H., Blue Belle, Bold Contender, Californian, Cheryl Marie, Conquest, Denise Marie, Eastern Pacific, Elizabeth C. J., Elsinore, Frances Anne, Gina Karen, Independence, Jinita, Joann Marie, Jo Linda, Kathleen, Kerri M., Marco Polo, Mariette, Mary Antonette, Mary Barbara, Mermaid, Ocean Harvester, Queen Mary, Sea Adler, Sunrise, Trinidad, Typhoon, United States, Venturous, Wendy

The cooperation of Matson Navigation Company and assistance of the Mates of the S.S. Hawaiian Enterprise in obtaining the expendable bathythermograph observations for the vertical temperature sections is acknowledged.

Charts

Figure 1.--Twelve-year mean (1961-1972) observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction.

Figure 2.--Observed sea level values of barometric pressure (millibars), resultant wind direction (degrees true), resultant wind speed (knots) and average wind speed (knots) regardless of direction.

Figure 3.--Mean sea surface temperature, eastern North Pacific Ocean. Squares show temperatures at weather ship stations. Numerals on shore are temperatures at coastal and lightship stations.

Figure 4.--Mean sea surface temperature chart, western North Pacific Ocean.

Figure 5.--Deviation of sea surface temperatures, eastern North Pacific Ocean from long-term charts of H. O. 225. Hatched areas are colder in 1972.

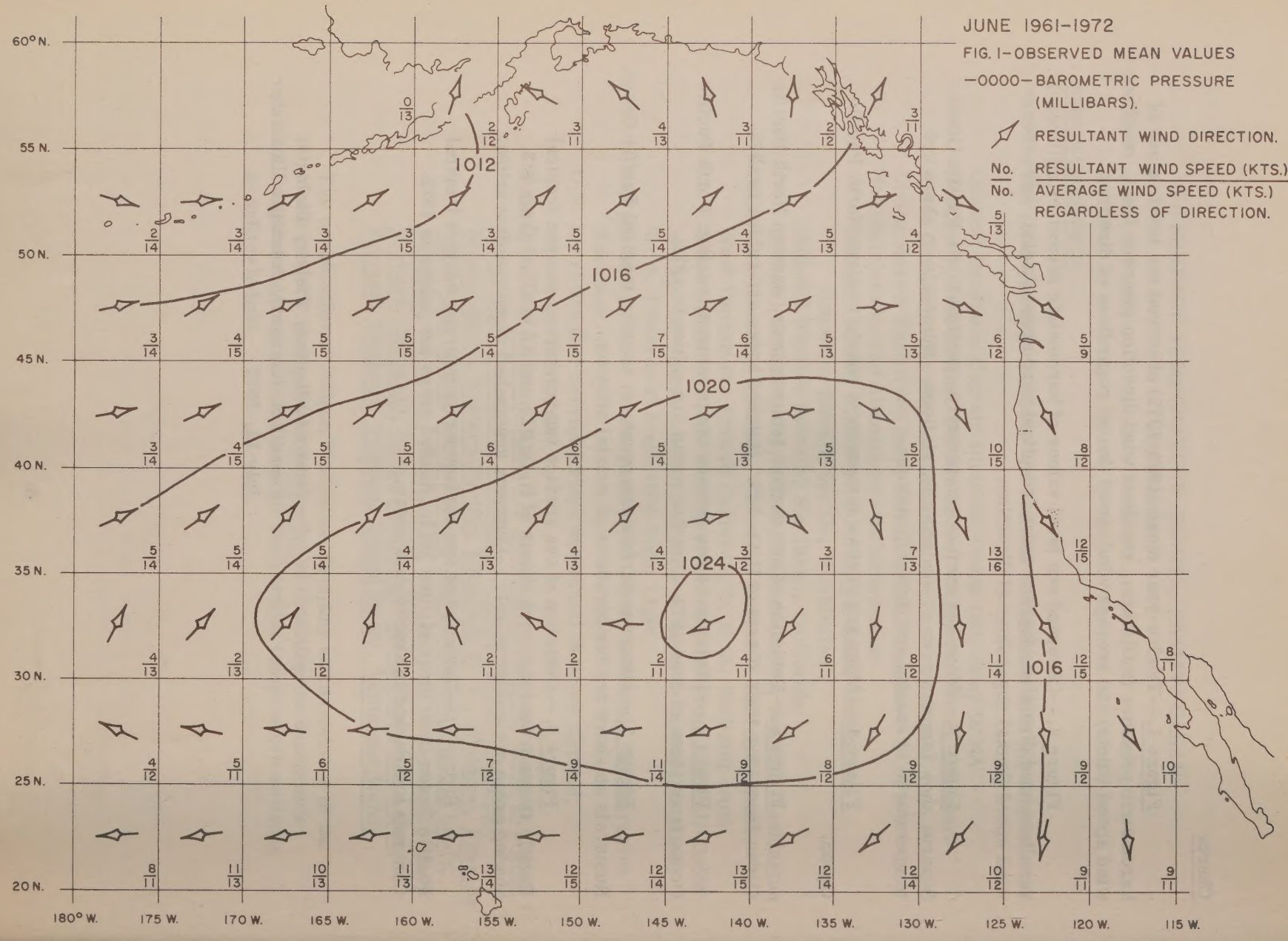
Figure 6.--Deviation of sea surface temperatures, eastern North Pacific Ocean from those of June 1971. Hatched areas are colder in 1972.

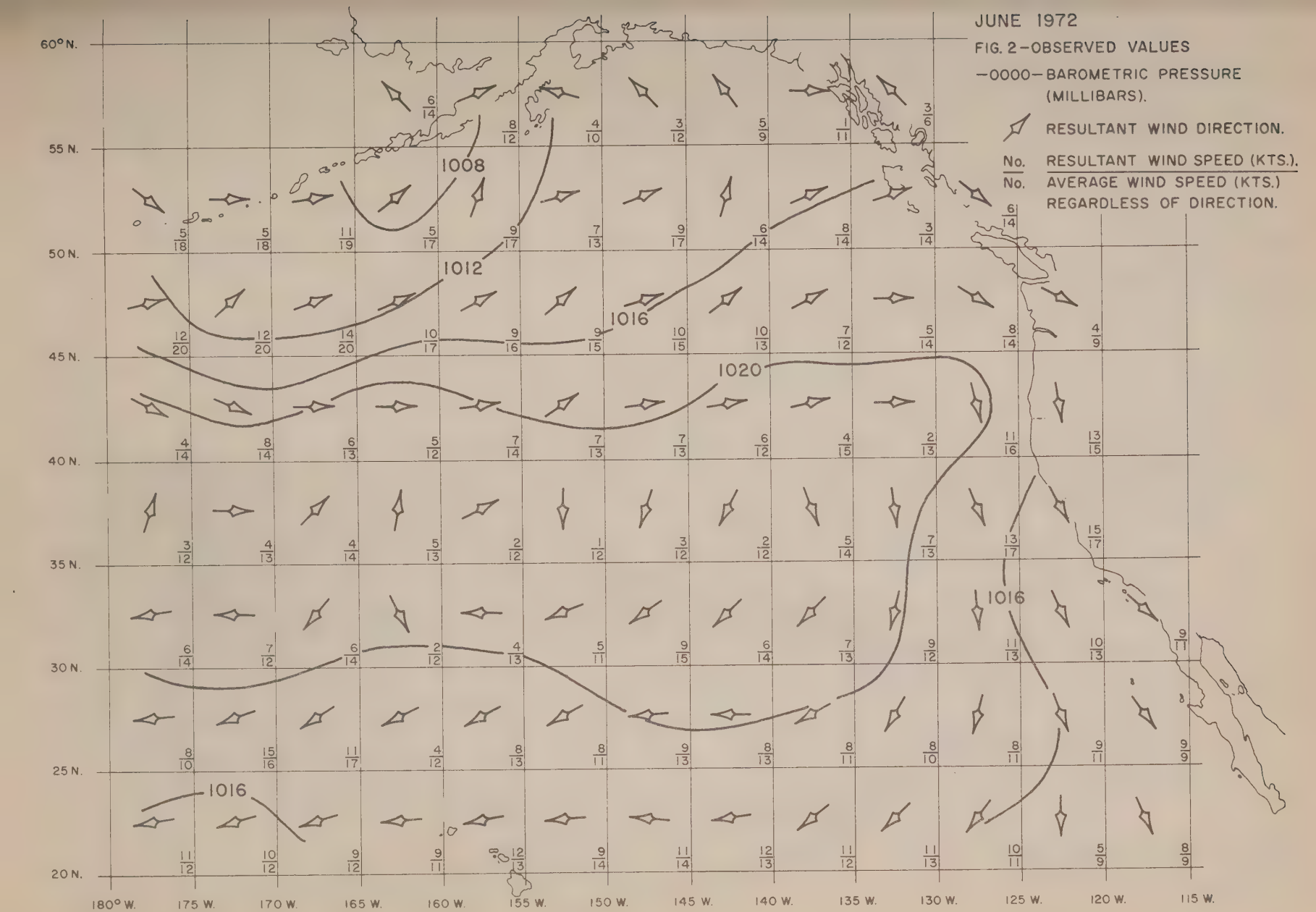
Figure 7.--Mean sea surface temperature, eastern tropical Pacific Ocean. Numerals on shore are temperatures at coastal stations.

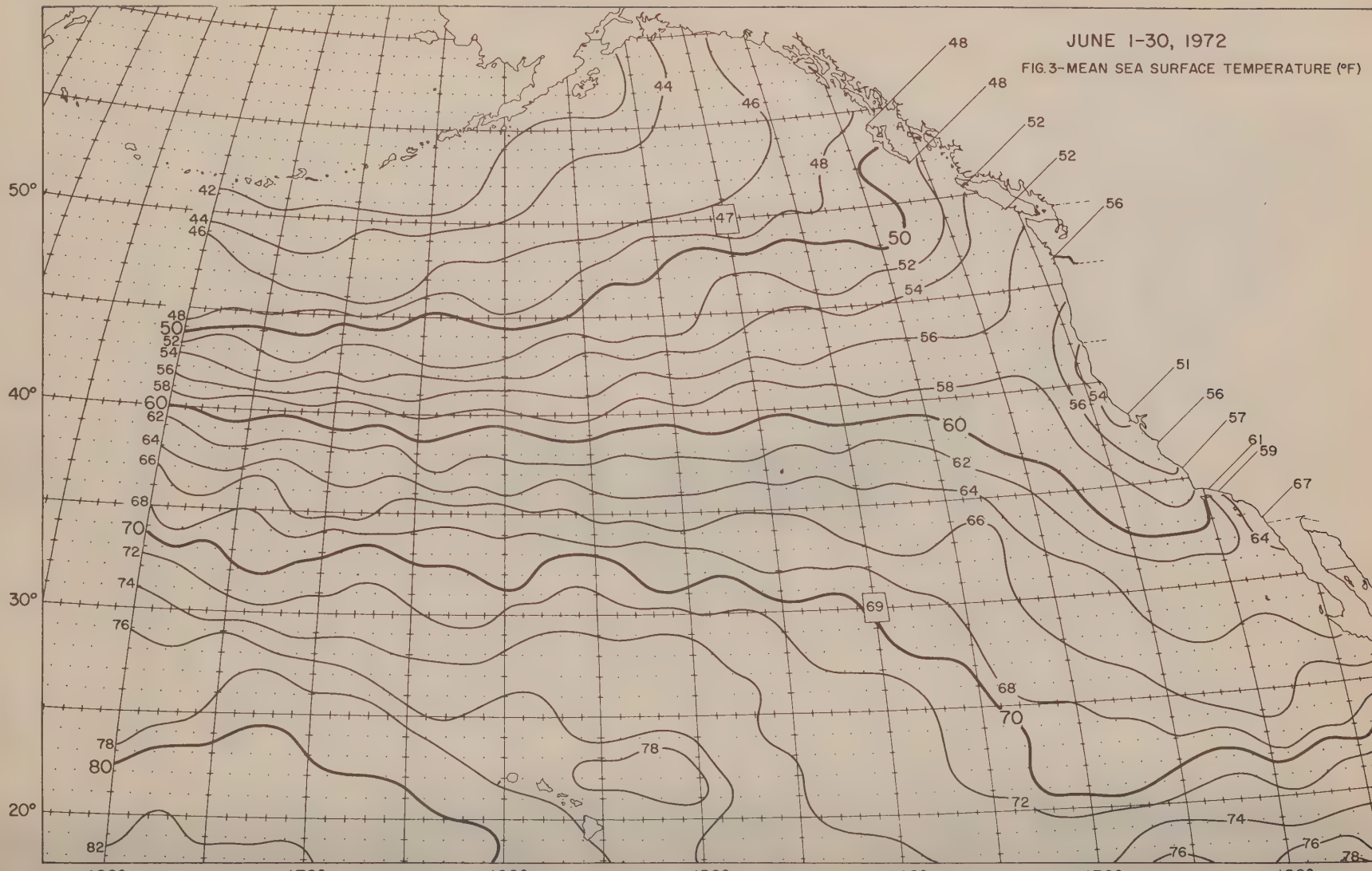
Figure 8.--Deviation of sea surface temperatures, eastern tropical Pacific Ocean from long-term charts of H. O. 225 and NAVOCEANO sp-123. Shaded areas are colder in 1972. Contours are dashed in sparse data areas.

Figure 9.--Deviation of sea surface temperatures, eastern tropical Pacific Ocean from those of June 1971. Shaded areas are colder in 1972. Contours are dashed in sparse data areas.

James A. Renner, Fishery Biologist
Kenneth S. Raymond, Scientific Illustrator
July 12, 1972

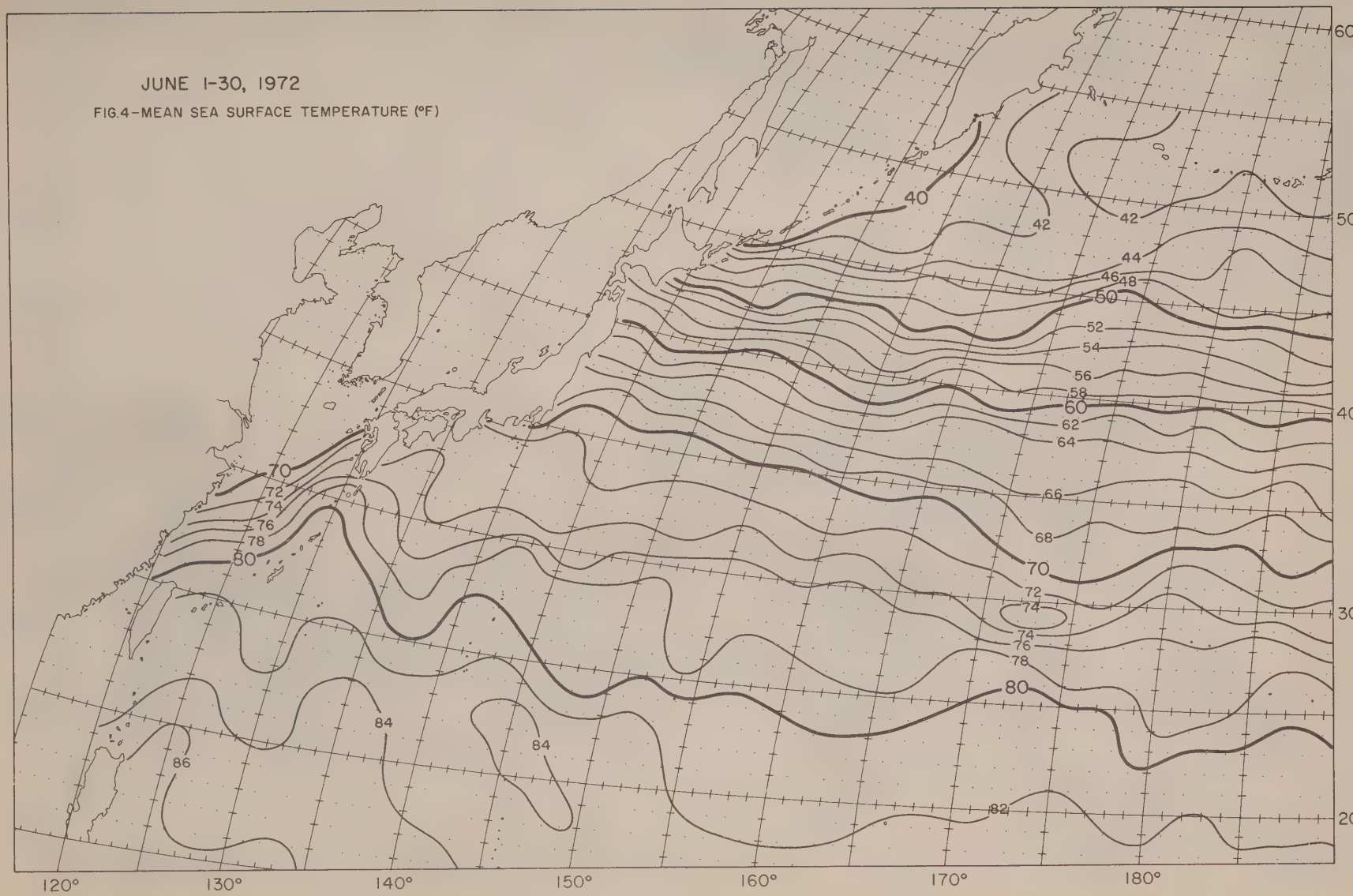

JUNE 1961-1972
FIG. 1-OBSERVED MEAN VALUES
—0000— BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1012
1016
1020
1024
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

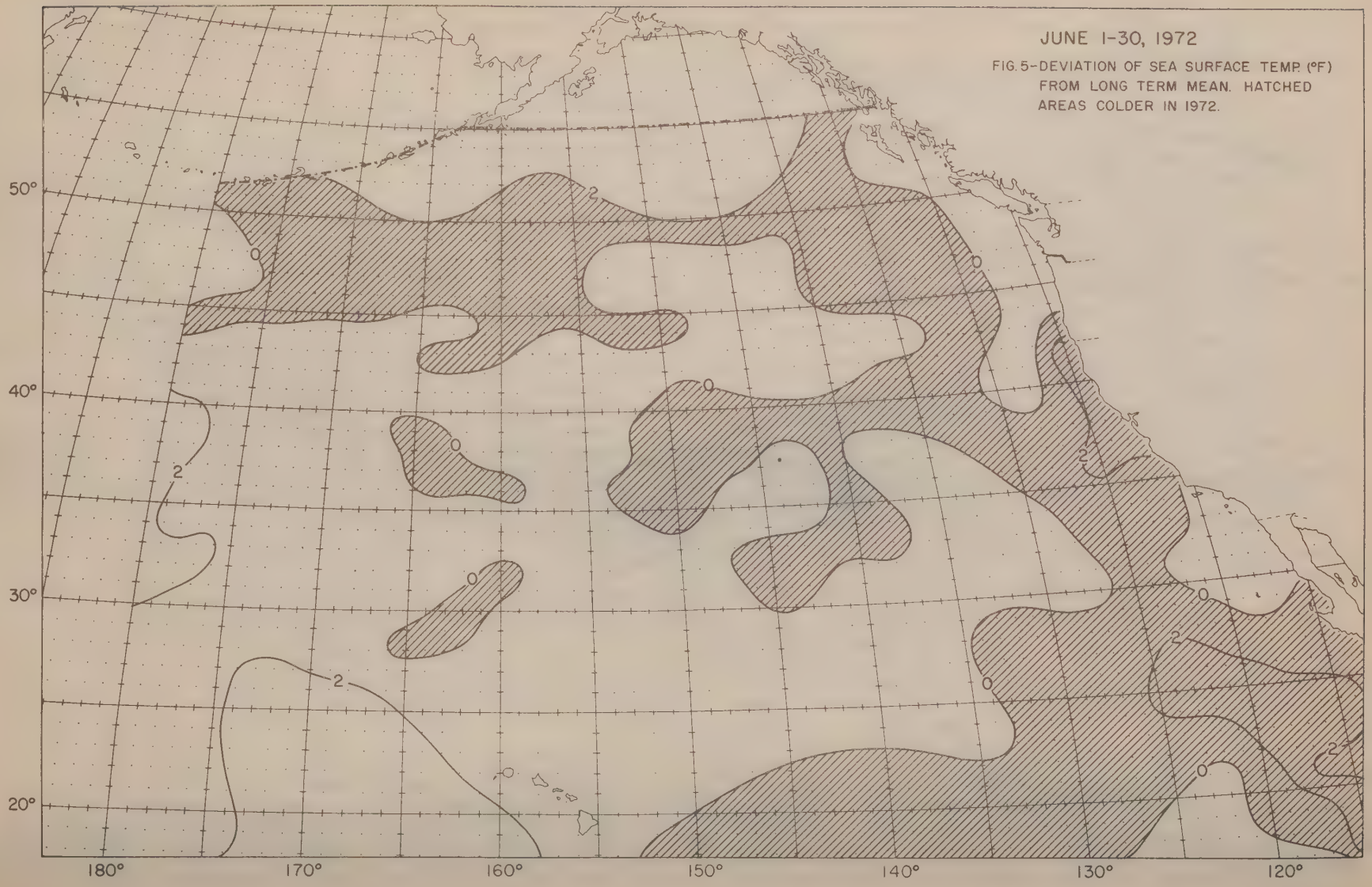

JUNE 1972
FIG. 2 – OBSERVED VALUES
–0000– BAROMETRIC PRESSURE (MILLIBARS).
RESULTANT WIND DIRECTION.
No. RESULTANT WIND SPEED (KTS.).
No. AVERAGE WIND SPEED (KTS.) REGARDLESS OF DIRECTION.
1008
1012
1016
1020
1016
1016
60° N.
55 N.
50 N.
45 N.
40 N.
35 N.
30 N.
25 N.
20 N.
180° W.
175 W.
170 W.
165 W.
160 W.
155 W.
150 W.
145 W.
140 W.
135 W.
130 W.
125 W.
120 W.
115 W.

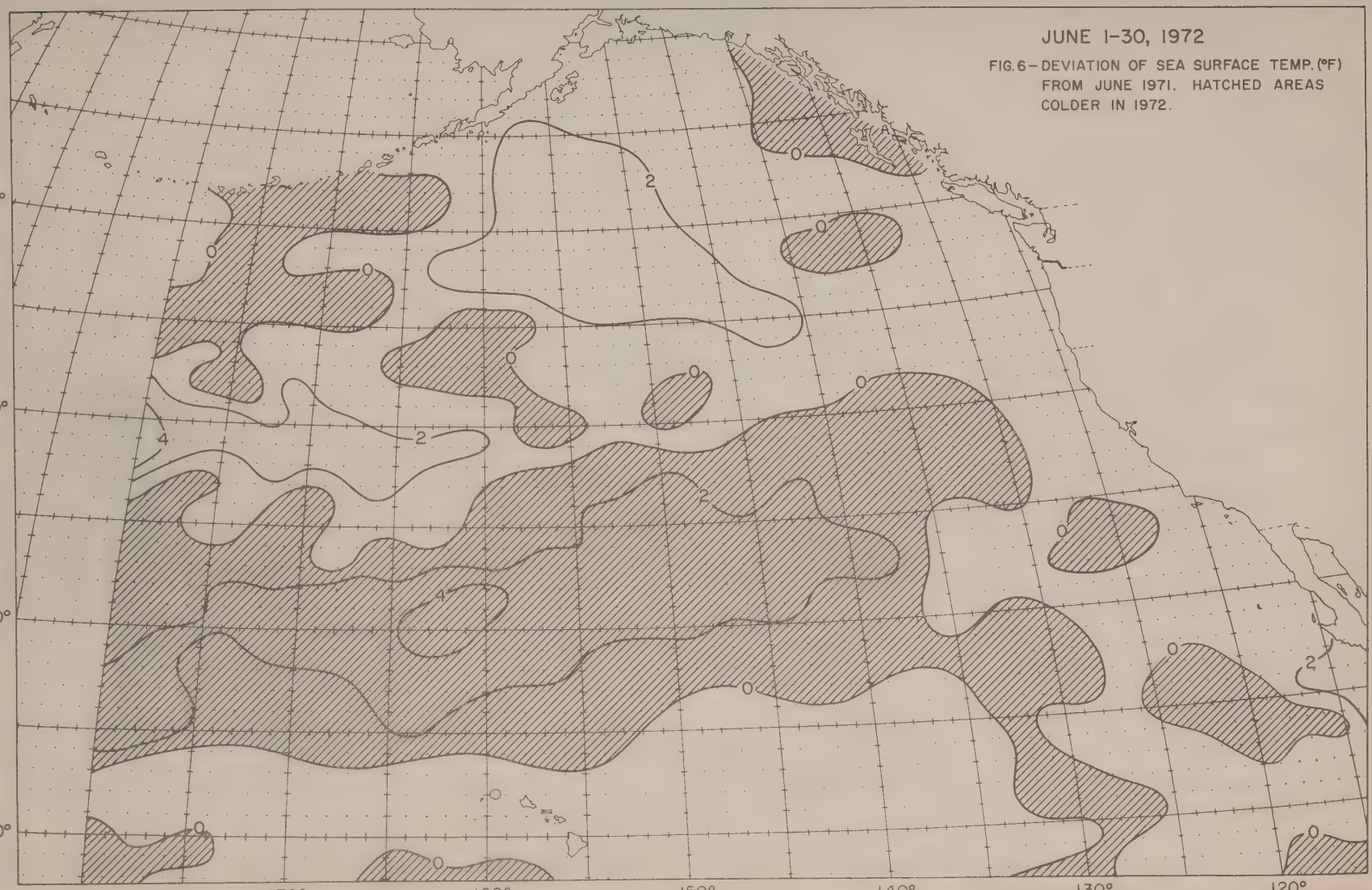

JUNE 1-30, 1972
FIG. 3-MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

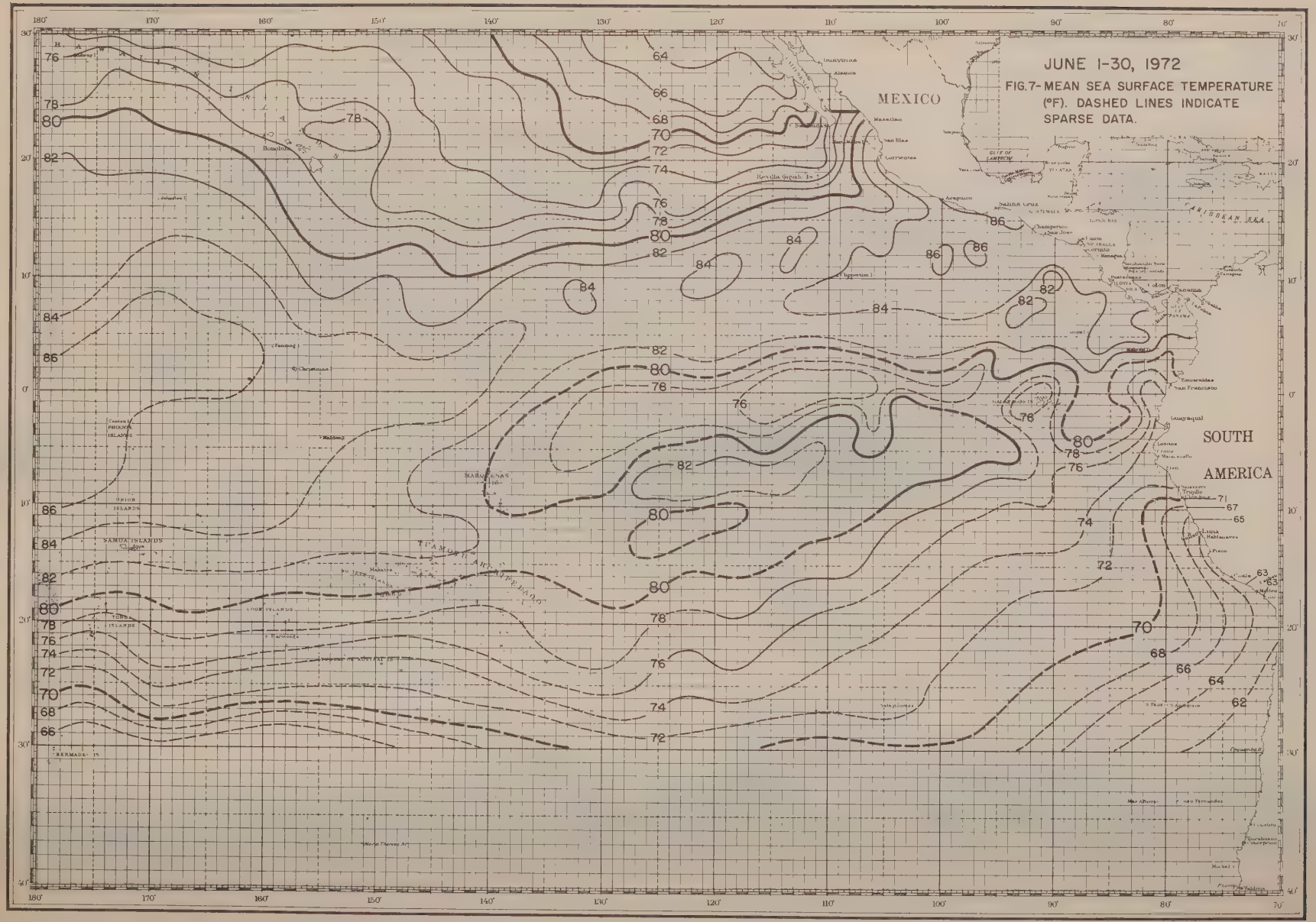
JUNE 1-30, 1972

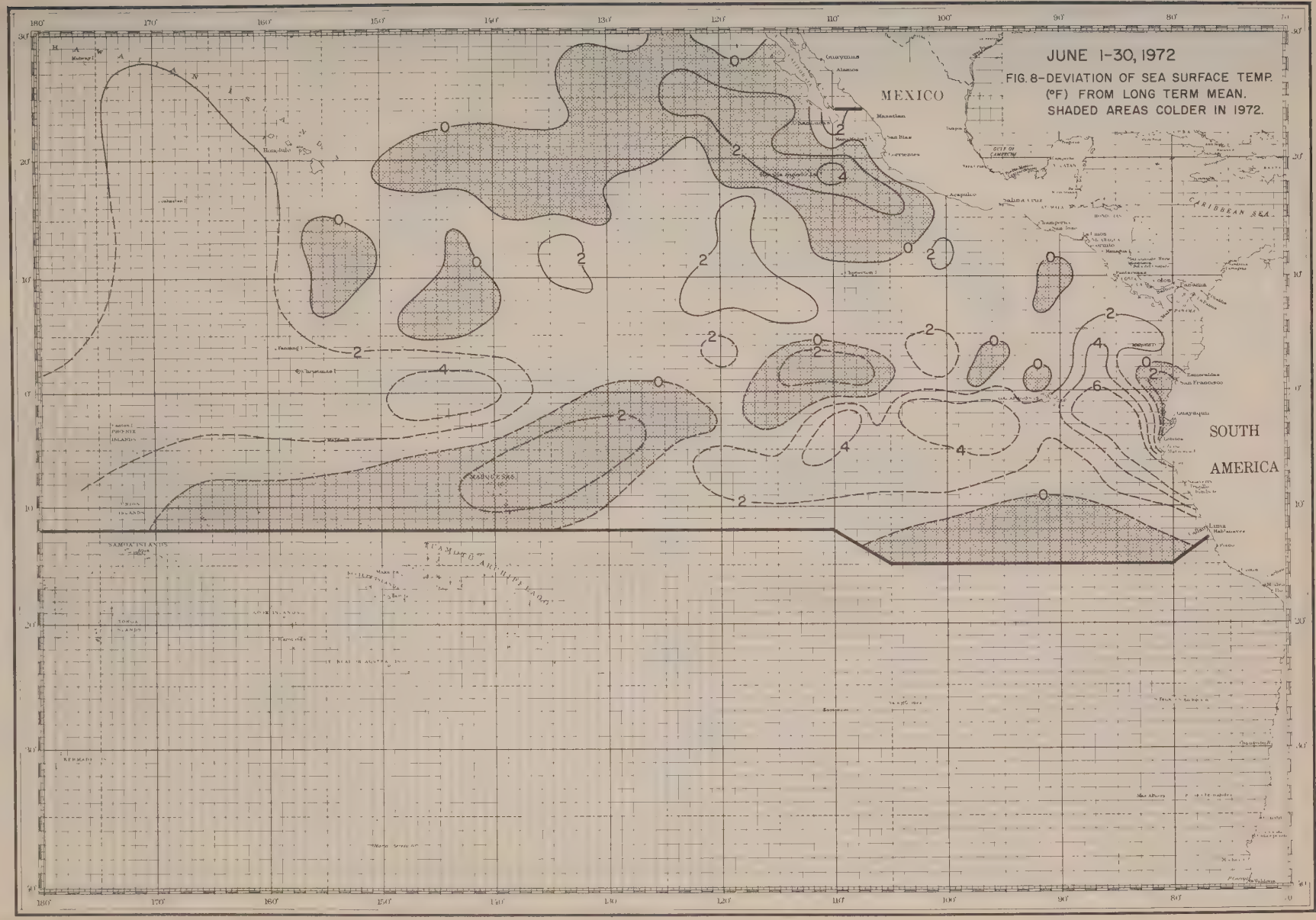
FIG.4-MEAN SEA SURFACE TEMPERATURE (°F)

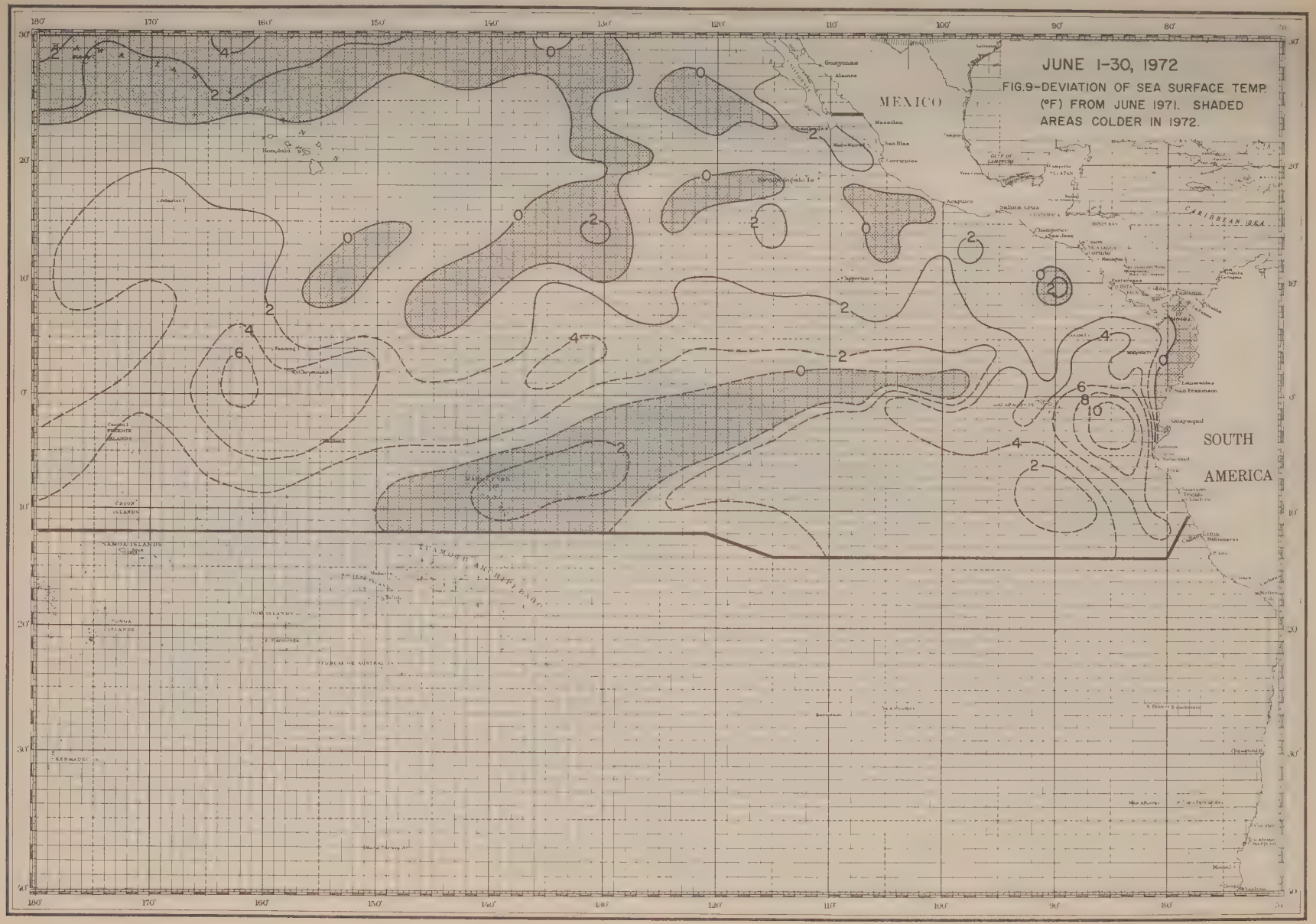



JUNE 1-30, 1972
FIG. 5-DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1972.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
0
2
0
0
2
0
2
0
2
0
2

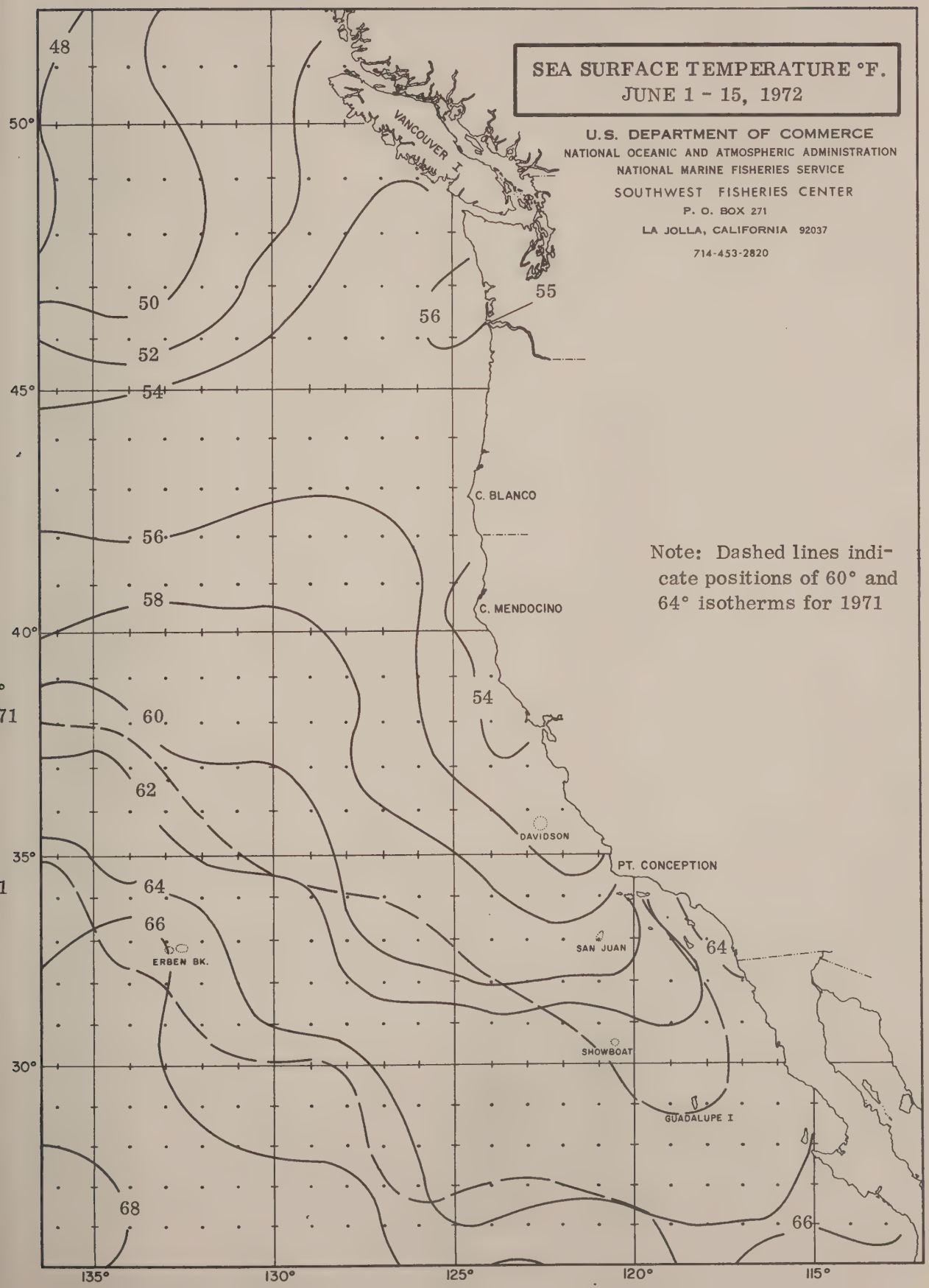

JUNE 1-30, 1972
FIG. 6 - DEVIATION OF SEA SURFACE TEMP. (°F) FROM JUNE 1971. HATCHED AREAS COLDER IN 1972.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4


JUNE 1-30, 1972
FIG.7- MEAN SEA SURFACE TEMPERATURE (°F). DASHED LINES INDICATE SPARSE DATA.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GALAPAGOS IS.
MARQUESAS IS.
SAMOA ISLANDS
PHOENIX ISLANDS
UNION ISLANDS
COOK ISLANDS
TUAMOTU ARCHIPELAGO
BERMUDA IS.
Acapulco
Salina Cruz
Panama
Guayaquil
Lima
Trujillo
Callao
Valparaiso
Easter I.
Fanning I.
Christmas I.
Palmyra I.
Johnston I.
Jarvis I.
Howland I.
Baker I.
Hull I.
Enderbury I.
Malden I.
Flint I.
Caroline I.
Vostok I.
Starbuck I.
Penrhyn I.
Nassau I.
Suwarrow I.
Rakahanga I.
Manihiki I.
Pukapuka I.
Tongareva I.
Manuae I.
Mitiaro I.
Atiu I.
Mauke I.
Rarotonga I.
Aitutaki I.
Manuae I.
Penrhyn I.
Nassau I.
Suwarrow I.
Rakahanga I.
Manihiki I.
Pukapuka I.
Tongareva I.
Manuae I.
Mitiaro I.
Atiu I.
Mauke I.
Rarotonga I.
Aitutaki I.

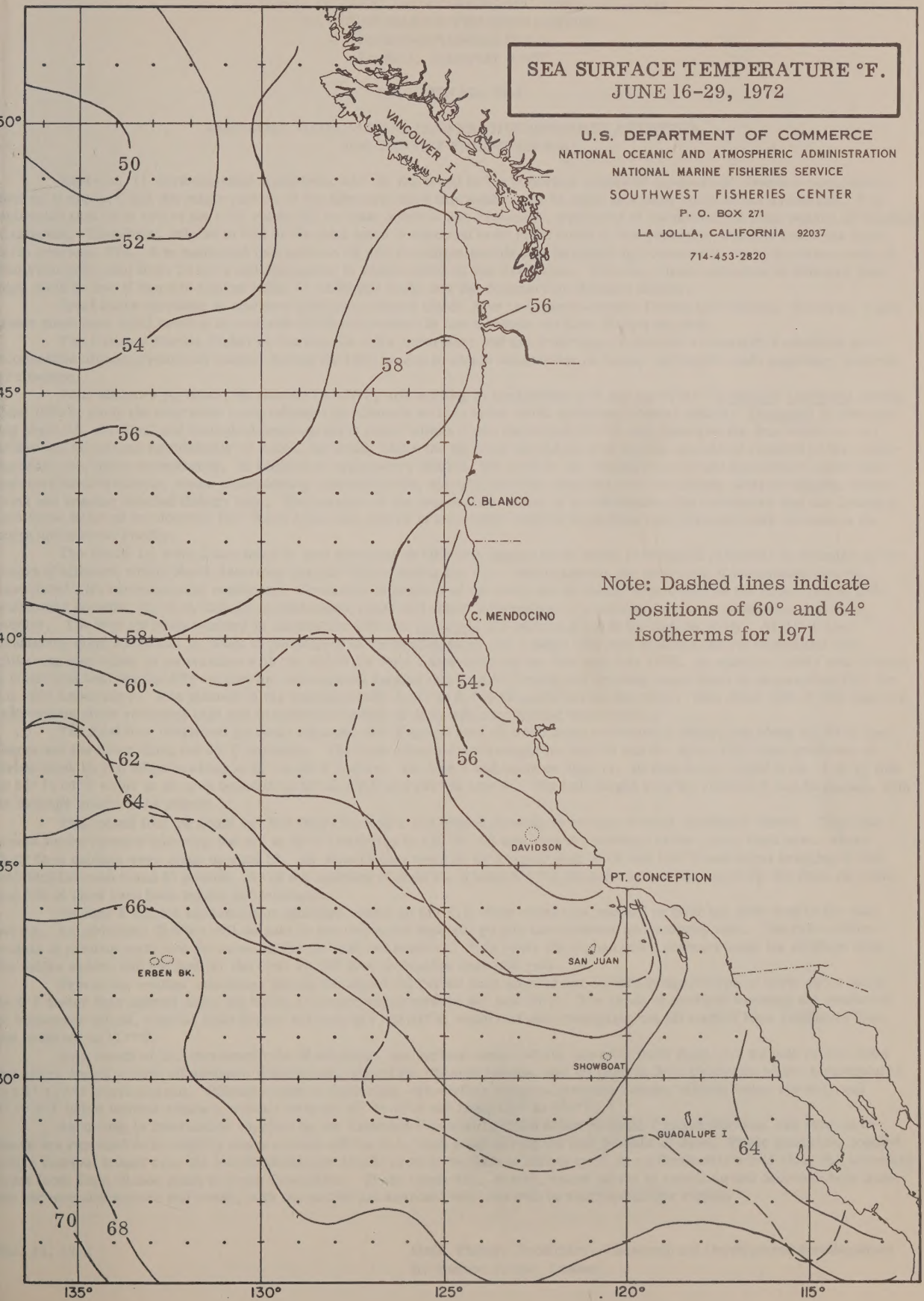

JUNE 1-30, 1972
FIG. 8-DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. SHADED AREAS COLDER IN 1972.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF MEXICO
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
10°
20°
30°
40°

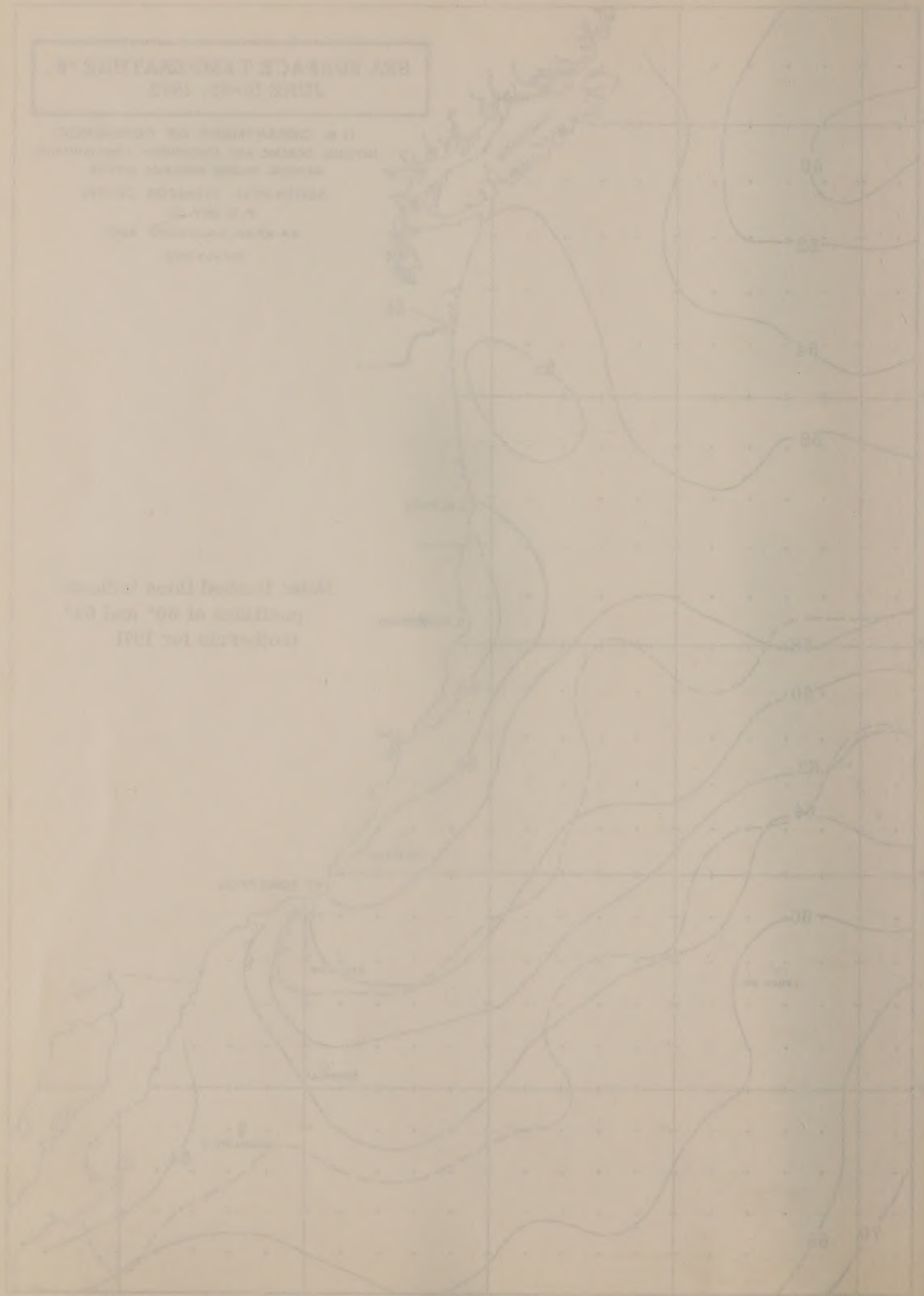

JUNE 1-30, 1972
FIG.9-DEVIATION OF SEA SURFACE TEMP. (°F) FROM JUNE 1971. SHADED AREAS COLDER IN 1972.
MEXICO
SOUTH AMERICA
CARIBBEAN IS.
180°
170°
160°
150°
140°
130°
120°
110°
100°
90°
80°
30°
20°
10°
0°
10°
20°
30°
40°

FISHING INFORMATION – supplement



FISHING INFORMATION – supplement





UNITED STATES DEPARTMENT OF COMMERCE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
NATIONAL MARINE FISHERIES SERVICE
Southwest Fisheries Center
La Jolla, California 92037

BULLETIN NO. 72-1

ALBACORE FORECAST AND COOPERATIVE RESEARCH ACTIVITIES FOR THE 1972 FISHING SEASON

Based on 1) environmental conditions, and 2) the trend in the historical record of commercial albacore catch distribution, it appears that the major portion of the albacore catch this season will be taken in waters south of San Francisco. It is estimated that 70 to 80% of the total catch will be taken south of San Francisco, with most of the production from waters off central California. Therefore, only 20 to 30% of the total catch is expected to be taken north of San Francisco which is below the long-term average, 36%. It is estimated that between 30 and 45 million pounds will be caught by commercial boats in waters south of San Francisco, and from 10 to 15 million pounds in waters north of San Francisco. However, these estimates of albacore landings could be low if there is a large influx of additional boats into the commercial albacore fishery.

Sport boats operating in southern California waters should have very good albacore fishing this season. However, warm water conditions could develop in southern California waters in late summer and limit fishing success.

The National Marine Fisheries Service La Jolla Laboratory and the American Fishermen's Research Foundation plan cooperative albacore research studies during the 1972 season to obtain information on large- and small-scale migratory patterns of albacore.

Four albacore jig boats, on charter to AFRF, are working in conjunction with the NMFS R/V Townsend Cromwell during June 1972 to study the migration route followed by albacore as they enter North American coastal waters. Cromwell is conducting physical, chemical and biological oceanographic observations in the vicinity of 140°W and, based on the data which are collected and processed immediately on board, directing where the jig boats should conduct fishing operations relative to the oceanographic conditions encountered. In addition to exploratory fishing, the vessels are making surface and subsurface ocean temperature measurements, water transparency measurements, synoptic weather observations, conducting albacore tagging operations and keeping detailed fishery logs. The purpose of the cooperative cruise is to substantiate the hypothesis that the immigration route followed by albacore into North American waters is associated with the transition zone between water masses in the north and central Pacific.

The NMFS La Jolla Laboratory is also directing an albacore tagging study which is designed primarily to examine movements of albacore within North American coastal waters during the U.S. fishing season and determine if movements may be associated with environmental conditions. Secondary objectives of the study are to obtain information on the proportion of fish which may re-enter the U.S. fishery in subsequent years and obtain information on mortality for use in population dynamics studies. The four jig boats working in conjunction with the Cromwell are participating in the tagging study. AFRF is also chartering eight additional jig boats to participate in the tagging study and conduct albacore scouting and environmental data gathering operations in cooperation with the NMFS La Jolla Laboratory during June and July 1972. In addition, AFRF will charter a small bait boat during July-August for conventional tagging and a sonic tagging and tracking experiment in cooperation with the La Jolla Laboratory. It is planned to tag approximately 4,000 to 5,000 albacore during the study. (See other side of this page for information about returning tags and broadcast schedule of daily albacore fishing information.)

The first four chartered jig boats departed San Diego on May 22 and worked westward in pairs, one along the 62°F isotherm and the other along the 65°F isotherm. The first albacore were caught on May 30 and 31, about 100 miles southwest of Erben Bank by two boats working in 65° to 66°F waters. On June 5 and again on June 11, all four boats caught from 11 to 81 fish in 64° to 66°F water in an area bounded by 33° to 35°N and 137° to 139°W. The fish caught weighed between 6 and 44 pounds, with an average weight of 14 pounds.

The second four jig boats left San Diego on June 1 and headed directly to an area west of Guadalupe Island. They continued southwestward following the 62° to 65°F isotherms to 125°W and then moved northwest to the Erben Bank area, where their first catches were made on June 13. By June 15 they were in 66°F water near 33°N and 132°W and began bringing in fish weighing between 5 and 33 pounds. As of the morning of June 15, a total of 1715 albacore have been caught by the eight jig boats, and 325 of them have been tagged and released.

On June 5 a price settlement on albacore landed on the U.S. west coast was reached at $680/ton delivered to the canneries. An additional $10/ton will be paid by the canneries that will go into the research and scouting fund. The price differentials at various ports are the same as for the last two seasons. This year, the signed price contract holds for landings over the entire season and not just for the first 25,000 tons as was the case last year.

Prevailing weather conditions during the June 1-15 period have allowed sea surface temperatures to warm by as much as 4°F faster than normal along the North American coast between 25° and 50°N. The areas of greatest warming are southwest of Vancouver Island, west of Cape Blanco between 41° and 44°N, south of Point Conception and off central Baja California from the coast out to 117°W.

As a result of this increased rate of warming, sea surface temperatures are near their June 1-15 normal values along the entire coast, except off northern Washington, around the Channel Islands, and off central Baja California where temperatures are 2° to 3°F above normal. Offshore central California, sea surface temperatures are running slightly below normal, and 2° to 3°F below normal values are found between 25° to 30°N and from 120° to 135°W.

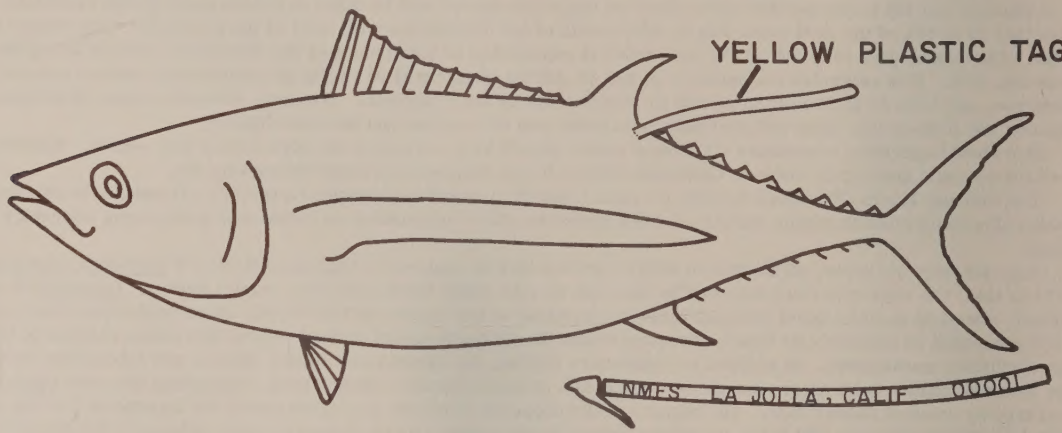
According to information supplied by the Extended Forecast Division of the National Weather Service, sea level pressures are expected to be slightly above normal off the U.S. west coast during the last 2 weeks of June. These conditions coupled with a thermal trough over the Pacific Southwest should produce periods of strong north to northwesterly winds along the immediate coast from Cape Blanco south to Point Conception. These winds will, in turn, cause pulses of upwelling and decrease heat transfer between atmosphere and ocean, with the result that seasonal warming will be retarded in this region.

June 15, 1972

Staff, Fishery Prediction - Research and Development Investigations
R. Michael Laurs, Leader

$ REWARD $

FOR ALBACORE TUNA TAGS



THE
NATIONAL MARINE FISHERIES SERVICE WILL PAY $ 2.00 FOR EACH TAG RETURNED (SOME FISH HAVE MORE THAN ONE TAG).

THE
AMERICAN FISHERMEN'S RESEARCH FOUNDATION WILL AWARD CASH PRIZES FOR THE NUMBERS DRAWN IN AN ANNUAL LOTTERY.

WRITE:

- WHERE
- WHEN
- HOW
- LENGTH OF FISH (TIP OF LOWER JAW TO FORK OF TAIL)

▶ FISH WAS CAUGHT

FORWARD TO NMFS ADDRESS ON TAG OR TO AFRF
4904 N. HARBOR DRIVE, SAN DIEGO, CALIFORNIA

Daily broadcasts of albacore fishing information prepared by NOAA's National Marine Fisheries Service (formerly Bureau of Commercial Fisheries) will be transmitted over marine radiobands starting June 12 and extending to October 31 or until the season ends. The broadcasts will be made on weekdays and Saturday mornings by the following radio stations:

WWD (La Jolla, California) on AM compatible frequency 4409.4 and on SSB carrier frequencies 4409.4, 8644.1, 8789.6, and 13147.5 kHz at 0600 and 1945 PDT.

KMX (Astoria Marine Operator) on 2598 kHz at 0630 and 1945 PDT.

KRED (Eureka, California) on commercial AM 1480 kHz at 0600 and 2000 PDT.